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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/826,130	04/04/2001	Andrew Sendonaris	010141	2294

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Qualcomm Incorporated
Patents Department
5775 Morehouse Drive
San Diego, CA 92121-1714

EXAMINER

WILLIAMS, LAWRENCE B

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 10/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/826,130

Applicant(s)

SENDONARIS ET AL.

Examiner

Lawrence B Williams

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-25 is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 3 are rejected under 35 U.S.C. 102(e) as being anticipated by Papasakellariou (US Patent 6,700,919 B1).

(1) With regard to claim 1, Papasakellariou discloses a method of improving the accuracy of a channel estimate by a pilot filter (col. 9, lines 34-39), comprising: generating samples corresponding to pilot symbols and non-pilot symbols (col. 6, lines 28-29), assigning a non-fixed weight to each of one or more non-pilot symbols, the non-fixed weight being variable and a function of the samples corresponding to the associated non-pilot symbol; and using the assigned

Art Unit: 2634

non-fixed weights for the one or more non- pilot symbols to generate the channel estimate (col. 13, lines 67).

(2) With regard to claim 2, Papasakellariou also discloses wherein the pilot filter is a CDMA filter (col. 16, lines 14-19).

(3) With regard to claim 3, Papasakellariou discloses that his invention may apply to other communication systems wherein the communication stream includes at least a pilot signal and information data, thus disclosing wherein the CDMA filter is a W-CDMA filter (col.16, lines 14-19).

Allowable Subject Matter

4. Claims 4- 25 are allowed.

5. The following is a statement of reasons for the indication of allowable subject matter: The instant application discloses techniques for incorporating non-pilot symbols along with pilot symbols to improve the estimate of the characteristics (e.g., amplitude and phase) of a communication link. A thorough and exhaustive search of prior art records has failed to teach “weighting samples corresponding to pilot symbols in accordance with a first set of one or more coefficients to provide first weighted samples; weighting samples corresponding to non-pilot symbols in accordance with a second set of one or more coefficients to provide second weighted samples; and generating the pilot estimates based on the first and second weighted samples” along with the remaining limitations of claim 4. Prior art records also fail to teach a pilot filter comprising; “one or more multipliers configured to receive and weigh

Art Unit: 2634

samples corresponding to pilot symbols with one or more first coefficients to provide first weighted samples, and to receive and weigh samples corresponding to non-pilot symbols with one or more second coefficients to provide second weighted samples” as disclosed in claims 18. and 25.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a.) Kim et al. disclose in US Patent 6,690,713 B1, a Tracking Loop for a Code Division Access (CDMA) system.

b.) Zang discloses in US Patent 6,674,815 B2, a Method for Symbol-Spaced Tracking of a Fractionally-Spaced Fading Radio Channel.

c.) Ramesh et al. discloses in US Patent 6,658,051 B1 Channel Estimates in a CDMA System Using Power Control Bits.

d.) Dent discloses in US Patent 6,507,602 B1 Smoothing Receiver Estimates Using Spectral Estimation.

e.) Dabak et al. discloses in US Patent 6,483,821 B1 CDMA Mobile Communications System and Method with Improved Channel Estimation and Pilot Symbol Transmission.

f.) Mesercher et al. disclose in US Patent 6,278,726 B1 Interference Cancellation in a Spread Spectrum Communication System.

g.) Nakano discloses in US Patent 6,219,391 B1 Wireless Communication Apparatus and Wireless Communication Method.

h.) Bruckert et al. discloses in US Patent 5,812,542 Method For Determining Weighting Coefficients in a CDMA Radio.

i.) Bar-David et al. disclose in US Patent 5,623,511 Spread Spectrum Code Pulse Position Modulation Receiver Having Delay Spread Compression.

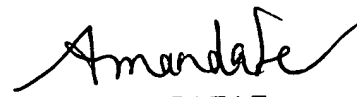
j.) Larsson et al. discloses in US Patent 5,465,376 a Method of Forming a Channel Estimate For a Time-Varying Radio Channel.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence B Williams whose telephone number is 571-272-3037. The examiner can normally be reached on Monday-Friday (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lawrence B. Williams


AMANDA T. LE
PRIMARY EXAMINER

Application/Control Number: 09/826,130

Page 6

Art Unit: 2634

lbw

October 15, 2004